CLINICAL ADVISORY

To: Healthcare Providers, Facilities, and Local Health Departments

From: Howard K. Koh, MD, MPH
Commissioner of Public Health

Date: October 17, 2001

Re: Information and Resources Regarding Anthrax

Incidents of anthrax and anthrax exposure have occurred in several locations around the United States. Thus far, there have been no cases of anthrax or anthrax exposure identified in Massachusetts, despite intensified surveillance.

The Massachusetts Department of Public Health (MDPH) wants to make you aware of existing and upcoming resource materials on the MDPH website www.state.ma.us/dph. In addition to earlier clinical and general advisories, posted today is guidance adapted from material from by the US Centers for Disease Control and Prevention providing clinical information for local health departments, health care providers and laboratories (see "Guidelines for Responding to Concerns About Anthrax" posted under "Provider Information" on the website). These detailed guidelines (too extensive to fax) deal with the management of exposures and possible exposures to anthrax and the laboratory procedures related to the diagnosis of infection due to *Bacillus anthracis*. They may be helpful in providing background information for counseling patients and coordinating clinical and laboratory activities.

It should be noted that concern is highest for circumstances of recognized risk, i.e. situations where mail or other materials arrive in the context of a verbal or written threat or contain powder or other suspicious material. In order to protect the public and avoid increased anxiety and unnecessary treatment, it is important to assess risk in the most objective fashion. If someone has received a letter, package, or object from an unknown party containing powder or other suspicious material and/or it is accompanied by a written or verbal threat, he or she should be instructed to call their local law enforcement officials or 911 and follow instructions as outlined in the guidelines. If there is no threat or exposure to suspicious material, patients and the public should be reassured they are at little or no real risk of getting anthrax infection.

The MDPH reiterates earlier guidance that antibiotics should only be prescribed and taken for valid clinical indications. Should there be evidence of anthrax exposure or concern about anthrax exposure warranting action, the MDPH will provide clear guidelines for patient management for that particular circumstance. In the absence of such exposure or possible exposure, antibiotics are not indicated for anthrax prophylaxis. Also, to reiterate, nasal swab cultures for anthrax are used solely for epidemiologic follow-up of known exposures.

The MDPH has an information line for the public and for healthcare providers at **1-866-627-7968**. This line provides information and technical assistance. Consultation with an MDPH epidemiologist for healthcare providers is available through that number, if you have questions about anthrax exposures or other issues.

Guidelines for Responding to Concerns about Anthrax
October 17, 2001

The Massachusetts Department of Public Health (MDPH) in conjunction with the US Centers for Disease Control and Prevention (CDC), offer the following guidelines for use in responding to questions about anthrax threats, unknown contamination of items or management of individuals concerned about potential exposure.

I. Advice to the Public – Remain Calm

- Anthrax does not present an immediate threat of injury.
- Exposure to anthrax does not necessarily mean infection.
- Anthrax is not spread from one person to another person.
- If it is determined that there is exposure, infection can be prevented.
- All reported incidents have and will be investigated.
- To date, no anthrax has been found in Massachusetts.

- If a letter, package, or object is of known origin (i.e. it is a usual or expected item from a known business or individual), conforms with the characteristics of normal mail, is not accompanied by any written or verbal threats, and contains no powdery substance, there is little or no health risk. There is no need to contact health or law enforcement officials.

- If a letter, package or object is of known origin (i.e. it is a usual or expected item from a known business or individual) is not accompanied by any written or verbal threat, and some particulate matter is found in or around it, the health risk is low. There is no need to contact health or law enforcement officials. If there is a question, the MDPH information line is available at 1-866-627-7968.

- If a letter, package or object contains a powdery substance and/or a written or verbal threat the following is advised:

1. Do not shake or empty the contents of any suspicious envelope or package; do not try to clean up powders or fluids.

2. Place the envelope or package in a plastic bag or some other type of container to prevent leakage of contents.

3. If you do not have any container, then cover the envelope or package with anything (e.g., clothing, paper, trashcan, etc.) and do not remove this cover.

4. Leave the room and close the door, or section off the area to prevent others from entering (i.e., keep others away).

5. Wash your hands with soap and water to prevent spreading any powder to your face or skin.

6. If you are at home, call 911. If you are at work, follow appropriate procedures at your workplace.

7. List all people who were in the room or area when this suspicious letter or package was recognized. Give this list to both the local public health authorities and law enforcement officials for follow-up investigations and advice.

8. If clothing or articles of clothing become contaminated with powder, carefully remove the clothes and keep them in a plastic bag until you are notified of results of testing.

9. If you have body or clothing exposure to a suspect material, then shower with soap and water as soon as possible. Do not use bleach or disinfectant on your skin.

10. Do not transport suspicious or contaminated material to the police, fire, or health department yourself.

11. Do not bring suspicious or contaminated material to the hospital, clinic, or doctor's office.

II. Advice to Healthcare Providers and Local Health Officials

Anthrax organisms can cause infection in the skin, gastrointestinal system, or the lungs. To do so the organism must be rubbed into abraded (open) skin, swallowed, or inhaled as a fine, aerosolized mist.

Anthrax is not spread from one person to another and does not present an immediate threat of injury. Exposure does not mean infection and the consequences of infection only occur after a several day incubation period. Disease can be prevented after exposure to the anthrax spores by early treatment with the appropriate antibiotics

For anthrax to be effective as a covert agent, it must be aerosolized into very small particles. This is difficult to do and requires a great deal of technical skill and special equipment. If these small particles are inhaled, life-threatening lung infection can occur, but prompt recognition and treatment are effective. Direct exposure to visible powder is most likely to result in cutaneous anthrax if it causes infection at all.

Signs and Symptoms of Anthrax Infection

Cutaneous Anthrax: A skin lesion evolving from a papule, through a vesicular stage, to a depressed black eschar. This is the most common naturally occurring type of infection (>95%) and usually occurs after skin contact with contaminated meat, wool, hides, or leather from infected animals. Incubation period ranges from 1-12 days. Skin infection begins as a small papule, progresses to a vesicle in 1-2 days followed by a necrotic ulcer. The lesion is usually painless, but patients also may have fever, malaise, headache and regional lymphadenopathy. The case fatality rate for cutaneous anthrax is 20% without, and less than 1% with, antibiotic treatment.

Inhalational Anthrax: A brief prodrome resembling a viral respiratory illness followed by development of hypoxia and dyspnea, with radiographic evidence of mediastinal widening. This, the most lethal, form of anthrax results from inspiration of 8,000-40,000 spores of *B. anthracis*. The

incubation of inhalational anthrax among humans is unclear, but it is reported to range between 1 and 7 days possibly ranging up to 60 days. Host factors, dose of exposure and chemoprophylaxis may play a role. Initial symptoms include sore throat, mild fever, muscle aches and malaise. These may progress to respiratory failure and shock. Meningitis frequently develops. Case-fatality estimates for inhalational anthrax are based on incomplete information regarding exposed populations and infected populations in the few case series and studies that have been published. However, case-fatality is extremely high, even with all possible supportive care including appropriate antibiotics. Records of industrially acquired inhalational anthrax in the United Kingdom before antibiotics were available reveal that 97% of cases were fatal. With antibiotic treatment the fatality rate is estimated to be at least 75%. Estimates of the impact of the delay in post-exposure prophylaxis or treatment on survival are not known.

Gastrointestinal Anthrax: Severe abdominal distress followed by fever and signs of septicemia. This form of anthrax usually follows the consumption of raw or undercooked contaminated meat and is considered to have an incubation period of 1-7 days. An oropharyngeal and an abdominal form of the disease have been described in this category. Involvement of the pharynx is usually characterized by lesions at the base of the tongue, sore throat, dysphagia, fever, and regional lymphadenopathy. Lower bowel inflammation usually causes nausea, loss of appetite, vomiting and fever, followed by abdominal pain, vomiting blood, and bloody diarrhea. The case-fatality rate is estimated to be 25-60%, the effect of early antibiotic treatment on that case-fatality rate is not defined.

Recommended Patient Evaluation Protocols

A. Asymptomatic patient WITHOUT known exposure

- Provide reassurance to the patient about the rarity of infection without known exposure.
- Post-exposure prophylaxis (PEP) and diagnostic testing are NOT indicated.
- Discourage use of nasal swabs for diagnosis of exposure. (Nasal swabs and blood serum tests are used as an epidemiological tool to characterize an outbreak when there is a known biologic agent.)

B. Asymptomatic patient WITH potential exposure

- Conduct an individual risk assessment and refer to appropriate clinician for post-exposure prophylaxis, if medically appropriate.
- If indicated by risk assessment, contact local law enforcement.
- Refer to healthcare provider for possible PEP. Decisions about immediate PEP versus waiting for testing results depend on the situation. If you have questions, consult with an MDPH epidemiologist by calling 617-983-6800.
- Decontamination procedures, other than by washing with soap and water, are NOT routinely recommended.
- In this case, diagnostic testing is not indicated.

C. Patients with symptoms compatible with anthrax but with no known exposure:

- Evaluate for anthrax and other diagnoses as appropriate.

- Call 617-983-6800 to report any suspect case of anthrax.

D. Patients with symptoms compatible with anthrax with potential exposure:

- Confirm the diagnosis by obtaining the appropriate laboratory specimens based on the clinical form of anthrax that is suspected (inhalational, gastrointestinal, or cutaneous).

    - Inhalational Anthrax: blood, CSF (if meningeal signs are present); chest X-ray looking for widened mediastinum

    - Gastrointestinal Anthrax: blood

    - Cutaneous Anthrax: vesicular fluid and blood

- Treat presumptively (consult infectious disease specialist as indicated).
- Call 617-983-6800 to report this patient to MDPH.

Post-Exposure Prophylaxis (PEP) Recommendations

	Initial Antibiotics	Duration
Adults (including pregnant women [1,2] and immunocompromised)	Ciprofloxacin 500 mg po BID **Or** Doxycycline 100 mg po BID	60 days
Children [1,3]	Ciprofloxacin 15-20 mg/kg po Q12 hrs[4] **Or** Doxycycline[5]: >8 yrs and >45 kg: 100 mg po BID >8 yrs and ≤ 45 kg: 2.2 mg/kg po BID ≤ 8 yrs: 2.2 mg/kg po BID	60 days

[1] For pregnant women, if testing indicates susceptibility, therapy should be changed to oral amoxicillin for post-exposure prophylaxis to continue for 60 days.
[2] Tetracyclines are not recommended during pregnancy, although their use may be indicated for life-threatening illness. Adverse affects on developing teeth and bones are dose related, therefore, doxycycline might be used for a short course of therapy (7-14 days) prior to the 6th month of gestation. Consult physician after the 6th month of gestation for recommendations.
[3] Use of tetracyclines and fluoroquinolones in children has adverse effects. These risks must be weighed carefully against the risk for developing life-threatening disease. If a release of *B. anthracis* is confirmed, children should be treated initially with ciprofloxacin or doxycycline as prophylaxis but therapy should be changed to oral amoxicillin 80 mg/kg of body mass per day divided every 8 hours (not to exceed 500 mg three times daily) as soon as penicillin susceptibility of the organism has been confirmed.
[4] Ciprofloxacin dose should not exceed 1 gram/day in children.
[5] In 1991, the American Academy of Pediatrics amended their recommendation to allow treatment of young children with tetracyclines for serious infections, such as Rocky Mountain spotted fever, for which doxycycline may be indicated. Doxycycline is preferred for its twice-a-day dosing and low incidence of gastrointestinal side effects.